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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,183	03/26/2004	Keiji Shimizu	04200/LH	8009

1933 7590 01/04/2007  
FRISHAUF, HOLTZ, GOODMAN & CHICK, PC  
220 Fifth Avenue  
16TH Floor  
NEW YORK, NY 10001-7708

EXAMINER
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FINEMAN, LEE A

ART UNIT	PAPER NUMBER
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2872

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/04/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/810,183

Applicant(s)

SHIMIZU ET AL.

Examiner

Lee Fineman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10/20/06 & 11/6/06.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 16-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 20 October 2006 has been entered in which claims 16 and 19 have been amended. Claims 16-21 are pending.

### ***Claim Objections***

Claims 19-21 are objected to because of the following informalities: Claim 19 includes the newly added limitation "so as to prevent stray light, from gaps between adjacent ones of the micromirrors, from reaching **the sample**." "The sample" lacks antecedent basis. The examiner recommends changing it to --the specimen--. The dependent claims inherit the deficiencies of the claims from which they depend. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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3. Claims 16-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al., US 2003/0063376 in view of DeSimone et al., US 2003/0086145.

Shimizu et al. teach a light source (23) which illuminates a specimen (11); an objective (8) located opposite to the specimen; a field stop projection lens (19), located on an illumination axis between the light source (23) and the objective (8), to narrow a field of view of the specimen; a digital micromirror device (20) which is conjugate with the specimen via the field stop projection lens and the objective, and which comprises a plurality of two-dimensionally arrayed micromirrors that are individually selectable to be turned on so as to reflect light along the illumination axis to the specimen (paras. 0052-0056); a reflection mirror (21) which reflects illumination light from the light source onto the digital micromirror device; a dichroic mirror (13) which is located on an observation axis of the objective so as to reflect the illumination light emitted from the light source onto the object and to pass observation light from the objective; an excitation filter (18) which selectively passes light components of the illumination light that are suitable for excitation of a fluorescent material in the specimen; an absorption filter (14) which selectively absorbs light components of the observation light; a camera (25) located on the observation axis to pick up an observation image; a monitor (84) which displays the image picked up by the camera; a drive controller (24) which controls the digital micromirror device; and a computer (85) which controls the drive controller, camera and monitor, such that before picking up an image of the specimen all the micromirrors are turned on while the no illumination light is incident and the image of the specimen is in the field of view of the camera and after the image is picked up the incident light is stopped; the image picked up by the camera is displayed by the monitor, and an irradiation area to be irradiated with the illumination light is specified and

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respective ones of the micromirrors which correspond to the specified irradiation areas are specified and before picking up an image of the sample again only the specified ones of the micromirrors are turned on while there is no incident light and when the light is incident the digital micromirror device light is guided to the specimen via the turned on micromirrors, such that the image is picked up by the camera and then the incident light is stopped (para. 0052-0056). Shimizu lacks reference to a shutter. DeSimone et al. teach the use of a shutter (82) located between a light source (46) and a reflection mirror (58) and a shutter (88) located between the digital micromirror device (48) and the field stop projection lens (37). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the shutters of DeSimone et al. in the invention of Shimizu et al. for the purpose of blocking the incident light to the digital micromirror device while the computer determines which micromirrors to activate, thus allowing the light source to remain on constantly and prolong the life of the light source. Many light sources are most vulnerable to failure at the moment the light is turned on, because of the rapid heating of the source and varying thermal expansion coefficients of the components of the light source. By including the shutters of DeSimone et al., the Shimizu et al. reference would not longer need to turn the light source on and off during the adjustment and calculation phase and would therefore prolong the life of the light source. Further when the shutter is closed, the shutter prevents all stray light from reaching the specimen, including from gaps between adjacent ones of the micromirror.

***Response to Arguments***

4. Applicant's arguments filed 20 October 2006 have been fully considered but they are not persuasive.

Applicant argues that the combination of Shimizu et al. and DeSimone et al. does not disclose operating a shutter in accordance with the operation of the DMD in the manner of the claimed present invention. The examiner respectfully disagrees. The addition of the shutter to be able to keep the light source on would necessarily be opened and closed during the calculation and therefore would be opened and closed as claimed between imaging otherwise the light would damage the sample. Further as stated in the rejection when the shutter is closed, the shutter prevents all stray light from reaching the specimen, including from gaps between adjacent ones of the micromirror.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lee Fineman whose telephone number is (571) 272-2313. The examiner can normally be reached on Monday - Friday 7:30 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



LAF  
14 December 2006

  
MARK A. ROBINSON  
PATENT EXAMINER